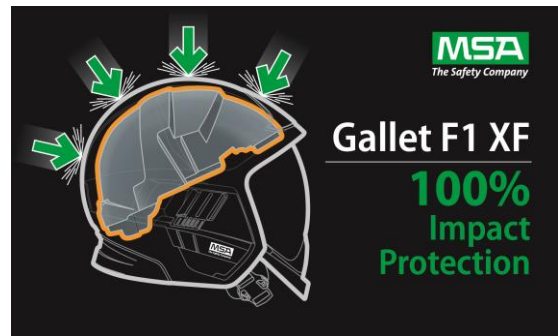
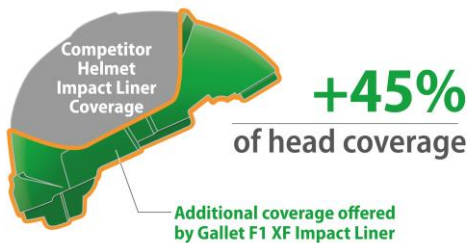


Quality of the material selection

MSA never compromises on the safety of wearers. Each component is evaluated and tested using a clear protocol. Because the material itself is not everything, MSA has also chosen not to restrict itself to what is described in the EN443 standard (Helmets for firefighting in buildings and other structures) to ensure maximum security for wearers, especially with regard to the safety critical components of the helmet.



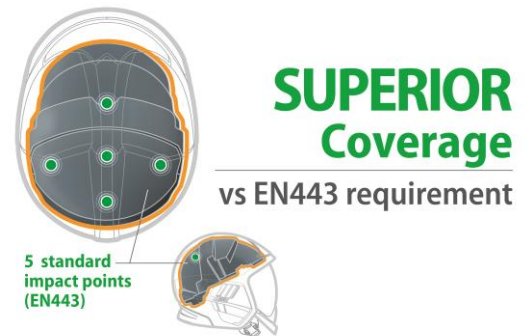
Better impact protection with high coverage liner



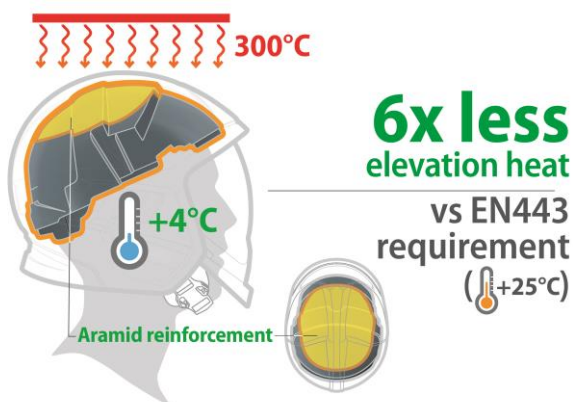
The size of the Gallet F1 XF impact liner has been **wearer** against shock and heat, and not only up to half of the skull. Because of **shock to the forehead could be fatal**.

Tests conducted internally in our laboratory on several EN443-certified helmets prove that impact to the shell alone, in an area not protected by the impact liner, can seriously injure the wearer. So MSA decided to go **beyond the normative requirements**, and opted for maximum protection rather than limiting itself to the minimum size needed to meet the standard.

The Gallet F1 XF impact liner consists of shock absorbing high density polyurethane foam with over moulded aramid reinforcement. It provides **full protection (impact and penetration) for the top, front & sides of the helmet** – not only for the 5 impact points listed in EN443. As a result, the Gallet F1 XF impact liner covers almost all wearer's head. There is no compromise to safety.



Higher thermal performance with aramid layer



The aramid layer on the top of the impact liner also provides a **higher thermal performance**. The thermal protection it delivers proves to be a major competitive advantage too, as it is perceivable by users in hot trainings or real fire situations. In many real fire testing situations, it succeeded in negating any heat breakthrough longer than any other helmet.

The Radiant Heat exposure test (EN443:2008 section 4.7) aims at submitting **14kW/m² heat flux (approx. 300°C) for 8 min** on one of the side impact point (left or right). It is then controlled that the temperature measured on the head form **does not increase by more than 25°C**. After exposure, and within 60 seconds, an impact test (shock or penetration) is

performed to check the helmet's mechanical performances when exposed to extreme heat stress. The average temperature increase under a **Gallet F1XF is only around +4°C** (average based on 205 lab tests recorded on the Gallet F1 XF), and the force transmitted to the head form is way below the limit of 15kN, with fully maintained protection against penetration.

From standards to the field: Gallet F1 XF protection level saved 2 lives



A helmet impacted with a falling object (sharp or not) while exposed to intense radiant heat, is a potential risk of any structural firefighting situation. Therefore during the design of the Gallet F1 XF helmet, MSA engineers carried out intense research on new materials for the helmet shell and the shock absorption system to protect fire fighters lives in the field.

In 2016, 2 fire fighters from a fire brigade located closed to Rostock (Germany) were **saved by their Gallet F1 XF helmets**.

During the firefighting, parts of the roof structure of a house collapsed. One fire fighter falls and receives a **complete chimney fence step (cast iron) from about 3 meters height** directly on his head. The other female fire fighter is also hit at the back and neck by the falling parts and some other bricks

The fantastic thing is that both of them escaped from the dangerous situation completely **uninjured**.

The full protection of the Gallet F1 XF helmet protects the lower areas on the sides of the head and neck area. It is impressive that despite of the high thermal impact, the following massive mechanical impact on the helmet only caused very slight damage to the outer shell of the helmet and the inner impact liner with the additional aramid layer remained completely undamaged.

The MSA mission is to continue to allow women and men around the world to work in safety, and that they can live healthy with their families and their loved ones.

